REMARKS/ARGUMENTS

Claims 28-52 are in the present application, of which claims 28, 40 and 48 are independent. Claims 1-27 have been canceled without prejudice herein. Applicant respectfully requests consideration and allowance of newly added claims 28-52.

I. Rejection of Claims 1-27 under 35 U.S.C. §§ 102(b) and 103(a) is Now Moot.

The Examiner rejects claims 1-4, 9, 11, 22 and 26-27 under 35 U.S.C. § 102(b) as allegedly being anticipated by Kobayashi et al. ("Kobayashi", U.S. Pub. No. 2002/0009116). The Examiner further rejects claims 1-4, 12-13, and 22 under 35 U.S.C. § 102(b) as allegedly being anticipated by Ishikawa et al. ("Ishikawa", U.S. Pub. No. 2001/0032976). The Examiner rejects claims 5-8, 14-18, 20, and 23-25 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kobayashi. Further, the Examiner rejects claims 5-8, 14-17, 21 and 23-25 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Ishikawa. Claims 10 and 19 are also rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kobayashi in view of Borchert et al. ("Borchert" U.S. Pat. No. 5,953,361). Since claims 1-27 are canceled herein, the rejection of claims 1-27 is now moot.

II. Newly Added Claims 28-52 are Patentably Distinguishable over the Art of Record.

A. Claims 28-52 are Not Anticipated by the Art of Record

To anticipate a claim, the reference must teach every element of the claim. "A claim is anticipated only if each and every

element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Therefore, all claim elements, and their limitations, must be found in the prior art reference to maintain a rejection based on 35 U.S.C. § 102.

Kobayashi discloses that "[t]he upper quantum well active layer comprises at least one well layer and at least one barrier layer. For example, the compositions and thickness of the well layer W and barrier layer B [of the upper quantum well active layer] are the same as those of the barrier layers B and well layers W of the lower quantum well active layer." (Emphasis Added, ¶[0048] of Kobayashi). Thus, Kobayashi teaches that the lower and upper active layers are formed using the same materials.

Ishikawa discloses "[t]he well layers and barrier layers in the MQW structure 2 [MQW-A and MQW-B] are formed by GaInAsP having different compositions" (See ¶ [0060]) and not that MQW-A and MQW-B are respectively made of high reactivity and low reactivity materials. In fact, both the quantum wells in Ishikawa are made of GaInAsP, a low reactivity material (e.g., see ¶ [0078]; present application, page 2, lines 15-18). Hence, Ishikawa teaches that the MQW structure, namely, MQW-A and MQW-B, are composed of low reactivity materials, which in this case is GaInAsP.

Borchert has been cited for the proposition that it "discloses a similar system where buffer layer 3 and upper clad 7 are the same dopant type," and does not disclose that upper and lower active layers are composed respectively of low reactivity and high reactivity materials.

Claim 28 recites, in a relevant portion, "[a] distributed feedback laser . . . comprising . . . the optical cavity comprising a first active region comprising at least one first active layer formed of a high reactivity material, the at least one first active layer extending continuously in a direction of propagation of the laser light, and a second active region comprising at least one second active layer formed of a low reactivity material, the high reactivity material being more susceptible to oxidation when etched than the low reactivity material." (Emphasis Added).

Since none of the cited references discloses a distributed feedback laser comprising an optical cavity comprising a first active region comprising at least one first active layer formed of a high reactivity material, the at least one first active layer extending continuously in a direction of propagation of the laser light, and a second active region comprising at least one second active layer formed of a low reactivity material, none of the cited references discloses all elements of claim 28, and claim 28 is not anticipated by any of the cited references.

Claim 40 recites, in a relevant portion, "[a] distributed feedback laser . . . comprising . . . the optical cavity comprising a lower active region comprising one or more lower active region quantum wells formed of a high reactivity material, the one or more lower active region quantum wells extending continuously in a direction of propagation of the laser light, and an upper active region comprising one or more upper active region quantum wells formed of a low reactivity material, the high reactivity material being more susceptible to oxidation when etched than the low reactivity material." (Emphasis Added).

Since none of the cited references discloses a distributed feedback laser comprising an optical cavity comprising a lower

active region comprising one or more lower active region quantum wells formed of a high reactivity material, the one or more lower active region quantum wells extending continuously in a direction of propagation of the laser light, and an upper active region comprising one or more upper active region quantum wells formed of a low reactivity material, none of the cited references discloses all elements of claim 40, and claim 40 is not anticipated by any of the cited references.

Claim 48 recites, in a relevant portion, "[a] method . . . comprising . . . forming a first active region . . . comprising a high reactivity material extending continuously in a direction of propagation of the laser light; forming a second active region to form an optical cavity comprising the first and second active regions and for generating a laser light, the second active region comprising a plurality of periodic structure elements comprising a low reactivity material and arranged in a direction of propagation of the laser light." (Emphasis Added)

Since none of the cited references discloses "forming a first active region comprising a high reactivity material extending continuously in a direction of propagation of the laser light; and forming a second active region comprising a plurality of periodic structure elements comprising a low reactivity material, none of the cited references discloses all elements of claim 48, and therefore claim 48 is not anticipated by any of the cited references.

Since claims 29-39, 41-47 and 49-52 respectively depend, directly or indirectly, from claims 28, 40 and 48, they each incorporate all the terms and limitations of the respective base claim in addition to other limitations, which together further patentably distinguish them over the cited references. Therefore,

claims 29-39, 41-47 and 49-52 are not anticipated by any of the cited references.

B. Claims 28-52 Would not Have been Obvious over the Cited References at the Time the Invention was Made.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. (Emphasis Added, *See* M.P.E.P. § 2142).

In the Office Action, the Examiner admits that Kobayashi "does not disclose the particular materials of the first QW structure (i.e. highly reactive, comprising Al or Sb)." However, the Examiner contends that "such QW materials are well known in the art." Further, the Examiner admits that Ishikawa does not disclose the materials of the active regions (as claimed in the instant application), but contends that this is taught as in the previous 103 rejection (presumably referring to the rejection over Kobayashi alleging that "such QW materials are well known in the art.")

However, even if the use of high reactivity materials for a QW structure were known in the art, the cited references must teach or suggest all the claim limitations to establish the *prima facie* case of obviousness for the claimed invention according to M.P.E.P. § 2142. Hence, in the absence of teaching or suggestion to form "a first active region comprising at least one first active layer formed of a high reactivity material, the at least one first active layer extending continuously in a direction of propagation of the laser light" as recited in claim 28, "a lower active region

comprising one or more lower active region quantum wells formed of a high reactivity material, the one or more lower active region quantum wells extending continuously in a direction of propagation of the laser light" as recited in claim 40 and/or "the first active region comprising a high reactivity material extending continuously in a direction of propagation of the laser light" as recited in claim 48, the *prima facie* case of obviousness cannot be established for any of the currently pending claims of the present application.

Hence, the cited references together fail to teach or suggest all claim limitations of any of claims 28-52. Therefore, one would not be able to establish a *prima facie* case of obviousness for claims 28-52 using the cited references. Therefore, claims 28-52 are not obvious over the cited references, and should be allowed.

III. Concluding Remarks

In view of the foregoing amendments and remarks, Applicant respectfully requests an early issuance of a Notice of Allowance allowing claims 28-52. If there are any remaining issues that can be addressed over the telephone, the Examiner is cordially invited to call Applicant's attorney at the number listed below.

Respectfully submitted,
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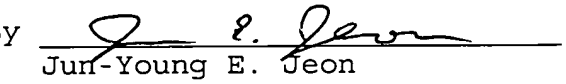
By 
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